

(21) Application No. 27367/70 (22) Filed 5 June 1970

(23) Complete Specification filed 17 May 1971

(44) Complete Specification published 30 Jan. 1974

(51) International Classification F16L 55/00 E03F 3/04

(52) Index at acceptance

F2P 11B 11E 13AX 23D 23E 28B 28D

BIC 6

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(54) IMPROVEMENTS IN OR RELATING TO RODDING PIPES FOR
UNDERGROUND DRAINAGE SYSTEMS

(71) We, THE MARLEY TILE COMPANY LIMITED, a British Company of Riverhead, Sevenoaks, Kent, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to rodding pipes for underground drainage systems.

It has been common practice for very many years to provide access to underground drainage systems, for example drainage systems for use with private dwellings, by means of man-sized inspection openings at ground level disposed above junctions between two or more drainage pipes of the system. It has been common practice to provide open channels at such junctions for easy inspection and the insertion of clearing rods in the event of blockage of the system.

With the introduction of drainage pipes moulded from plastics material such as rigid polyvinyl chloride for example, it has been proposed to dispense with the large inspection openings and open channels at junctions between conduits, and instead to provide rodding pipes at convenient points extending from ground level down into the drainage system by means of which clearing rods can be inserted into the system for clearing any obstructions therein.

According to the invention there is provided a rodding pipe for an underground drainage system comprising a pipe connectable at one end to the drainage system, a removable closure cap for closing the other end of the pipe, the closure cap being provided with a resilient sealing gasket arranged to engage said other end of the pipe with a non-adjustable force such that in use the closure cap is held by the engagement of the gasket with said other end of the pipe against removal by internal pressure in the pipe until the internal pressure rises to a level at which it overcomes the force of frictional engagement, and a generally annular member secured to said other end serving as a seating

member for said closure cap and serving to receive means for locking said closure cap in the closed position. 50

By means of the invention, in addition to providing a convenient closure to the rodding pipe, the closure cap may function as a safety relief valve in the event of blockage of the drainage system. Thus in the event of a blockage forming in the drainage system downstream of any particular rodding pipe, the fluid in the drainage system will back up, and in due course rise up within the rodding pipe. It will continue to back up until the pressure beneath the closure cap is sufficient to overcome the frictional grip of the resilient gasket, whereupon the closure cap will be forced from the rodding pipe, and the trapped fluid will escape from the end thereof, relieving the pressure of the blocked fluid and also indicating the presence of a blockage close to and downstream from that particular rodding pipe. 70

The safety relief function of the closure cap may be rendered inoperative when it is desired to test the drainage system under high internal fluid pressure for leaks and weak spots without the closure cap being forced from the end of the pipe, by attaching a closure cap locking means to said seating member. The locking means preferably comprises a screw lid engaging and screwing upon screw threads on said seating member. The seating member may be joined to the rodding pipe by solvent welding. 80

The closure cap may fit within said other end of the rodding pipe, and the resilient gasket may be an annulus disposed around the closure cap. 85

The closure cap may be provided with means for removal by hand from the rodding pipe for inspection purposes for example. 90

In order that the invention may be more fully understood, one embodiment thereof will now be described by way of example with reference to the accompanying drawings, in which:— 95

Figure 1 is a diagrammatic side elevation,

showing a rodding pipe in accordance with the invention connected to a portion of an underground drainage system; and

Fig. 2 is a partly cut away side elevation, showing in larger scale, the upper end of the rodding pipe illustrated in Fig. 1.

Referring now to Fig. 1, it will be seen that a rodding pipe 1 is connected at its lower end, via a bend 2 and a junction pipe 3, to a pipe 4 forming part of an underground drainage system. All of these pipes are formed of rigid polyvinyl chloride. At its upper end, the rodding pipe 1 is provided with a closure assembly 5 disposed within a concrete annular enclosure 6 having a concrete cover 7.

As seen in Fig. 2 the upper end of the rodding pipe 1 incorporates an annular seating member 8 formed of rigid polyvinyl chloride and solvent welded to the outer wall of the end of the pipe 1 as shown at 9. Fitting within the end of the pipe 1 is a closure cap 10 of rigid polyvinyl chloride which has an annular shoulder 11 abutting at one end, via a flat annular seal 12, against the seating 8. Disposed within an outer annular recess of the cap 10 is an annular flexible sealing gasket 13 of butyl rubber which engages against the side of the pipe 1 and since the degree of engagement is not in any way adjustable, the gasket 13 engages against the side of the pipe 1 with a fixed force. As will be seen the gasket 13 is provided on its outer surface with a rib 14. It will be appreciated that alternative configurations of the gasket 13 are possible. Thus it is possible to provide it with a number of ribs projecting outwardly and upwardly towards the end of the pipe 1. In such an arrangement the ribs would resist removal of the closure cap 10 to a much greater extent than insertion of the cap 10 into the end of the pipe 1.

An upstanding ridge 15 is provided in the cap 10 to serve as a handle for removal of the cap for inspection purposes for example.

The seating member 8 is provided with external screw threads 16 engageable with internal screw threads 17 of a screw lid 18 acting as a locking means for the closure cap whereby seating member 8 serves as a member for receiving the locking means. This screw lid is provided for rendering inoperative the action of the cap 10, so that the drainage system can be tested under high internal fluid pressure for leaks and weak spots, without the closure cap being forced by the contained pressurised fluid from the end of the pipe 1. Additionally the screw lid might be retained in a screwed on position, with respect to some rodding pipes within a total drainage system, so that only a certain number of rodding pipes are used, in the manner referred to below, for blockage safety and detection purposes.

In normal operation of the assembly, and with the screw lid removed, a blockage occurring in the drainage pipe 4 at the position 19 for example will cause the fluid within the drainage system to build up behind the blockage and in due time to rise up the rodding pipe 1. There will eventually be such a pressure below the closure cap 10 that it will force the closure cap 10, against the frictional contact of the sealing gasket 13 with the inner wall of the pipe 1, from the end of the rodding pipe. The pressure required to overcome the frictional engagement of gasket 13 of cap 10 with pipe 1 is for all practical purposes fixed and can be estimated in advance as being equal to the fixed force of engagement of gasket 13 with pipe 1. Thus the pressure of the fluid behind the blockage in the pipe 4 will be relieved, and the presence of a blockage downstream of the blocking pipe 1 will be clearly obvious. To clear the blockage, flexible rodding members can, in a manner already well known, be inserted down the rodding pipe 1 so as to reach and remove the obstruction 21.

WHAT WE CLAIM IS:—

1. A rodding pipe for an underground drainage system comprising a pipe connectable at one end to the drainage system, a removable closure cap for closing the other end of the pipe, the closure cap being provided with a resilient sealing gasket arranged to engage said other end of the pipe with a non-adjustable force such that in use the closure cap is held by the engagement of the gasket with said other end of the pipe against removal by internal pressure in the pipe until the internal pressure rises to a level at which it overcomes the force of frictional engagement, and a generally annular member secured to said other end serving as a seating member for said closure cap and arranged to receive means for locking said closure cap in the closed position.

2. A rodding pipe as claimed in claim 1 wherein said seating member and pipe are formed of rigid polyvinylchloride and said seating member is joined to said pipe by solvent welding.

3. A rodding pipe as claimed in any of the preceding claims wherein said resilient gasket is formed as an annulus disposed about a portion of said closure cap arranged to fit within said other end.

4. A rodding pipe as claimed in any of the preceding claims wherein said resilient gasket includes at least one circumferential rib arranged to engage said pipe.

5. A rodding pipe as claimed in claim 4 wherein said at least one rib projects upwardly and outward towards said other end so that the force required to remove said

closure cap is substantially greater than that required to insert it.

- 5 6. A rodding pipe as claimed in any of the preceding claims wherein said resilient gasket is formed of butyl rubber.

7. A rodding pipe as claimed in any of the preceding claims wherein said closure cap is formed of rigid polyvinylchloride.

- 10 8. A rodding pipe as claimed in any of the preceding claims wherein said closure cap is provided with means for facilitating removal from said pipe by hand.

- 15 9. A rodding pipe as claimed in any preceding claim wherein said closure cap has a further flat seal arranged to engage the seating member.

10. A rodding pipe as claimed in any preceding claim wherein said seating member is externally screw-threaded for re-

ceiving a mating screw thread on said closure cap locking means. 20

11. A rodding pipe as claimed in claim 13 incorporating a closure cap locking means, wherein the locking means comprises a screw lid. 25

12. A rodding pipe for an underground drainage system substantially as described with reference to the accompanying drawings.

13. An underground drainage system incorporating one or more rodding pipes as claimed in any one of the preceding claims. 30

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Printed for Her Majesty's Stationery Office by Burgess & Son (Abingdon), Ltd.—1974.
Published at The Patent Office, 25 Southampton Buildings, London WC2A 1AY,
from which copies may be obtained.

